

**NASA** Space Transportation Propulsion Technology Symposium  
DEVELOPMENT, MANUFACTURING & CERTIFICATION **PSU**

---

---

## NATIONAL TEST BED CONCEPT

COORDINATOR: PLEDDIE BAKER  
NASA-WHITE SANDS TEST FACILITY

CONTRIBUTOR: ROGER MEYER  
LESC-WHITE SANDS TEST FACILITY

CONTRIBUTOR: MELVIN McILWAIN  
AEROJET-PROPULSION DIVISION

Space Transportation Propulsion Technology Symposium  
**NASA** **ISSUES** **PSU**

---

---

- HIGH COST OF PROPULSION TESTING
- ATTRITION OBSOLESCENCE AND NONEXISTENCE  
OF PROPULSION TEST FACILITIES
- ATTRITION OF TECHNICAL SKILLS AND  
EXPERTISE OF PROPULSION TEST PERSONNEL



Space Transportation Propulsion Technology Symposium

## HIGH COST OF PROPULSION TESTING

---

---

PSU

- COUNTER-PRODUCTIVE COMPETITION BETWEEN CENTERS
- USE OF OTHER GOVERNMENT FACILITIES
  - VERY HIGH COST OF TESTING
  - SCHEDULE CONFLICTS
  - LIMITED TECHNICAL SKILL/KNOWLEDGE TRANSFER
- FUNDING OF FACILITIES/EQUIPMENT IN PRIVATE SECTOR
  - BIASES COMPETITION ON NEW PROGRAMS
  - DIFFICULT FOR OTHER CONTRACTORS TO USE
  - DIFFICULT TO RELOCATE
  - HIGH COST OF TESTING AND MAINTENANCE



Space Transportation Propulsion Technology Symposium

## ATTRITION, OBSOLESCENCE, AND NON-EXISTENCE OF PROPULSION TEST FACILITIES

---

---

PSU

- ENVIRONMENTAL RESTRICTIONS/IMPACTS
- ENCROACHMENT BY PRIVATE SECTOR
- AGING AND/OR OBSOLETE
- INEFFICIENT
- LIMITED OR NONEXISTENT CAPABILITIES



## Space Transportation Propulsion Technology Symposium

### ATTRITION OF TECHNICAL SKILLS AND EXPERTISE OF PROPULSION TEST PERSONNEL

PSU

---

---

- LOSS OF SKILLS AND EXPERTISE DURING LONG-LIFE PROGRAMS
- LITTLE EXPERIENCE GAINED/TRANSFERRED WHEN TESTING AT OTHER GOVERNMENT FACILITIES
- INADEQUATE TRANSFER OF PRACTICAL KNOWLEDGE AND OPPORTUNITY FOR HANDS-ON EXPERIENCE
- DECLINING NUMBER OF TECHNICAL PERSONNEL AVAILABLE



## Space Transportation Propulsion Technology Symposium

### OBJECTIVES

PSU

---

---

- DEVELOP WITHIN NASA A NATIONAL TEST BED FOR PROPULSION SYSTEM TESTING
- EFFICIENTLY UTILIZE NASA's LIMITED FUNDING FOR FUTURE PROPULSION SYSTEM DEVELOPMENT AND SUSTAINED FLIGHT SUPPORT
- ENSURE ADEQUATE TEST FACILITIES ARE AVAILABLE WITHIN NASA TO SUPPORT FUTURE PROPULSION SYSTEMS
- DEVELOP AND MAINTAIN WITHIN NASA AND THE PRIVATE SECTOR THE TECHNICAL SKILLS AND EXPERTISE FOR FUTURE PROPULSION SYSTEM DEVELOPMENT

- ESTABLISH WITHIN NASA HQ ONE ORGANIZATION RESPONSIBLE FOR ADMINISTERING ALL NASA PROPULSION TESTING
- ESTABLISH AN INDEPENDENT REVIEW ORGANIZATION TO:
  - INVENTORY EXISTING NASA TEST FACILITIES AND THEIR CAPABILITIES
  - DETERMINE THEIR FUTURE USABILITY
  - COMPARE THEIR CAPABILITIES/USABILITY TO THE NEED FOR FUTURE PROPULSION SYSTEM TESTING
  - RECOMMEND TYPE/SIZE PROPULSION SYSTEM BEST TESTED AT EACH FACILITY
  - RECOMMEND MODIFICATIONS/ADDITIONS TO BE MADE TO EACH FACILITY

- ESTABLISH A NATIONAL TEST BED FOR PROPULSION SYSTEM TESTING
  - FACILITIES WHICH WILL BE INCLUDED
  - TYPE/SIZE OF PROPULSION SYSTEMS WHICH WILL BE TESTED AT EACH
  - MODIFICATIONS/ADDITIONS WHICH WILL BE MADE TO EACH AND WHEN
- ESTABLISH A "JANNAF LIKE" FORUM OF REPRESENTATIVES FROM THESE TEST FACILITIES TO ENHANCE THE TRANSFER OF PROPULSION TEST TECHNOLOGY AND INFORMATION
- ESTABLISH AND FUND A PROGRAM TO STIMULATE INTEREST AT ALL LEVELS OF EDUCATION IN MATH, SCIENCE, AND SPACE

- NASA HQ COMMITMENT TO A NATIONAL TEST BED FOR PROPULSION TESTING - LATE FY 90
- NASA HQ COMMITMENT/FUNDING TO AN EDUCATIONAL PROGRAM TO STIMULATE INTEREST AT ALL LEVELS IN MATH, SCIENCE, AND SPACE - LATE FY 90
- REVIEW COMPLETED, NATIONAL TEST BED ESTABLISHED, RESPONSIBILITIES ASSIGNED - LATE FY 91
- JOINT NASA "JANNAF LIKE" WORKING GROUPS FORMED AND FUNCTIONING - EARLY FY 92
- MODIFICATIONS AND ADDITIONS TO EXISTING TEST FACILITIES - FY 92-96